PATIENT

Ruby Fermaglich

SPECIES

Canine

BREED

Maltipoo

SEX

Spayed Female

AGE

13 Years 2 Months

WEIGHT

10 pounds

INTERPRETED BY

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

IMAGING PERFORMED BY

Shari Reffi CVT

HOSPITAL NAME

Marsh Hospital for Animals

REFERRING VET

Dr. Meghan Armani

INVOICE

13098

DATE

01/12/26

PRESENTING CLINICAL SIGNS

New finding cardiac murmur grade 2.

Abnormal PE/Chem/CBC/UA Results: WNL USG 1.035

ULTRASONOGRAPHIC EXAMINATION OF THE HEART & ABDOMEN

CANINE CARDIAC PARAMETERS	BW	HR BPM	LAD 4 ch Long	RAD 4 ch Long	La/Ao Heart Base	LVIDd	LVIDs
NORMAL PARAMETER		50-100			<1.6		
PATIENT	4.55	NM	2.07	1.12	1.14	2.11	1.37
CANINE CARDIAC PARAMETERS	**FS**	**EPSS**	**PV V MAX (m/s)**	**AV V Max (m/sec)**	**MR Vmax**	**TR Vmax**	**RPA distensibility (normal >30%)**
NORMAL PARAMETER	28-40	<0.6	0.7-1.6	0.7-1.7	4.5-5.5	< 2.7	
PATIENT	35	0.2	0.9	1.3	5.7	2.1	NM

Cardiac Presentation

The left atrium is normal in dimension. The left ventricle is normal in dimension, with normal systolic function. The right atrium and ventricle are normal in dimension, with normal systolic function. The mitral valve is thickened and redundant consistent with myxomatous changes, and there is mild prolapse. There is evidence of trivial mitral regurgitation. The tricuspid valve leaflets are minimally thickened with trivial tricuspid regurgitation and no evidence of pulmonary hypertension. The left ventricular outflow tract demonstrated normal laminar flow and the visible aorta is unremarkable. The right ventricular outflow tract assessment revealed normal laminar flow, and appropriate diameter and distensibility. There is no pulmonic and no aortic valve insufficiency identified. There is no visible pericardial, pleural, or free peritoneal fluid documented. No evidence of hepatic venous congestion is noted. The cardiac chambers, pericardial and visible extra-cardiac regions were free of masses, spontaneous echo contrast, or thrombi.

Urinary System

The urinary bladder is adequately distended with anechoic urine. The bladder, trigone, and pelvic urethra are unremarkable with normal wall thicknesses and normal tone. The ureters were not visualized, which is a normal finding. There are no uroliths or sediment noted. The ureteral papillae appear normal. There is no evidence of inflammatory, infiltrative, or neoplastic disease.

The kidneys are normal in size and structure. The cortices are hyperechoic with a decrease in corticomedullary definition. There are scattered renal cortical cystic changes and mild pyelectasis

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bilaterally. The cortex to medulla ratio is appropriate. Mildly irregular renal capsules. No significant mineralization or urolithiasis identified. The left kidney measures 3.19 cm. The right kidney measures 3.88 cm.

Adrenal Glands

At the caudal pole, the adrenal glands are thin and slightly flattened with isoechoic parenchymal detail. The phrenic vasculature is normal. The left adrenal gland measures 0.37 cm. The right adrenal gland measures 0.36 cm.

Spleen

The spleen is smooth with homogeneous parenchyma and hyperechoic to liver and renal cortical parenchyma. The capsule is without noticeable irregularity or deformation. The splenic vasculature is normal without signs of congestion, spontaneous echo contrast, or thrombosis. No evidence of acute or chronic inflammatory, neoplastic, or infarct are documented. The spleen measures 0.98 cm at the hilus.

Liver

The liver is subjectively enlarged and diffusely hyperechoic with a mottled or heterogeneous parenchyma. There are scattered hypoechoic to cystic nodular changes. In the central to slightly left liver, there's an irregular hypoechoic mass effect at the caudal aspect of the liver. The vasculature is normal with no evidence of congestion. No hepatic lymphadenopathy is documented.

The gallbladder contains a mild amount of suspended echogenic debris and dependent sediment. The cystic and common bile ducts are normal. No evidence of intra- or extrahepatic biliary dilation. The gallbladder wall is appropriately thin.

Gastrointestinal

The stomach and intestines are free of stasis and peristaltic activity, with no significant dilation noted. There is normal wall thickness and acceptable curvilinear mural detail. The pyloric-duodenal junction and ileocecocolic junction are patent, and the colon contains normal shadowing feces. There is no evidence of shadowing obstructive material or overt infiltrative disease noted. No associated abnormal lymphatic activity is documented.

Pancreas

The pancreas is isoechoic to surrounding omental fat. The pancreatic duct and capsular contour are normal. There is no overt evidence of active inflammatory or neoplastic disease.

Free Abdomen

There is no significant lymphadenopathy or free fluid.

ULTRASONOGRAPHIC FINDINGS

- The cardiac findings are consistent with degenerative/myxomatous mitral valve disease with minimal to mild hemodynamic effects consistent with ACVIM Stage B1 disease. It is unlikely that any current morbidity is of cardiac origin.
- There is increased renal cortical echogenicity and thickening with a mildly irregular capsular contour. Multifocal cystic cortical changes are noted. This is secondary cystic formation

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consistent with chronic age-related degeneration and remodeling. There is no evidence of abscessation or suspicion of neoplasia.

- Both adrenal glands are flattened and isoechoic. This may be normal for this patient or potentially secondary to hypoadrenocorticism or adrenal burnout from chronic disease.
- The diffuse hepatic changes are non-specific and could be consistent with vacuolar hepatopathy, nodular hyperplasia, inflammatory, immune-mediated, metabolic, or endocrine disease. Infiltrative neoplasia or acute hepatitis cannot be ruled out.
- The hypoechoic irregular mass effect in the central to mid liver may represent infiltrative neoplastic disease such as hepatocellular carcinoma or less likely hemangiosarcoma.
- The gallbladder contains echogenic, suspended and dependent unorganized debris. This is not yet to the level of an organized mucocele, however early/developing mucocele cannot be ruled out. This dependent sediment is often an incidental finding or may be associated with concurrent endocrine disease such as hyperadrenocorticism or diabetes mellitus.

INTERPRETATION OF THE FINDINGS & FURTHER RECOMMENDATIONS

Given these findings, no cardiac therapy is recommended. There are no cardiac contraindications to anesthesia, fluid therapy, vasopressor therapy, or corticosteroids as indicated for further assessment and treatment. If not already performed, baseline thoracic radiographs and blood pressure are recommended. A recheck echocardiogram is recommended in 6 months.

Anesthesia considerations:
If anesthesia is necessary, alpha-2 agonists, ketamine, high dose acepromazine, and Telazol should be avoided. Fluid therapy during anesthesia should be considered at a conservative rate (e.g., 5 ml/kg/hour) if possible.

Diet:
A high-quality food from Hills, Royal Canin, Science Diet, Eukanuba, Iams, or Purina that is highly palatable with adequate protein and calories for maintaining optimal body condition is reasonable.

Activity:
No special considerations are necessary.

A urinalysis and urine culture via cystocentesis are recommended to evaluate the urinary tract changes for potential urinary tract infection. Fine needle aspirates of the liver with cytology are recommended. A coagulation profile and platelet estimate prior to sampling are indicated to ensure the absence of coagulopathy. Occasionally some tissues are poorly exfoliative, or cytology is non-specific, in which case biopsy with histopathology may be required for a definitive diagnosis.

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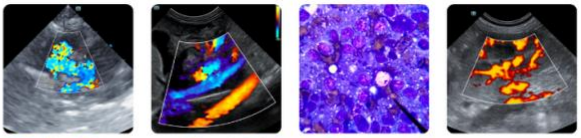

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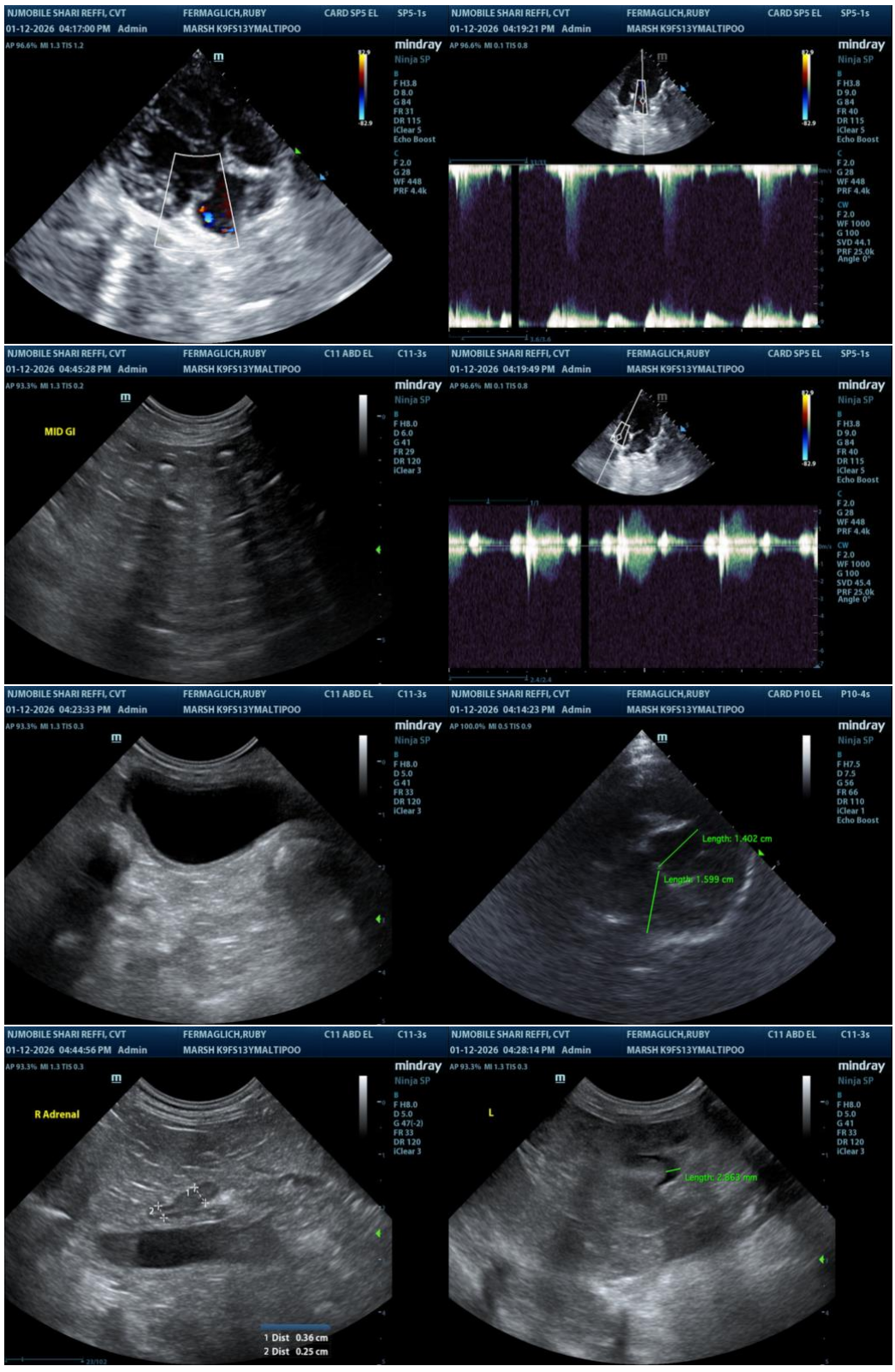

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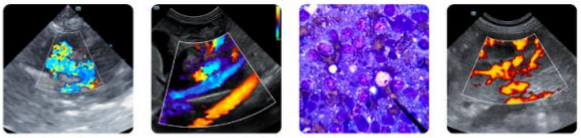

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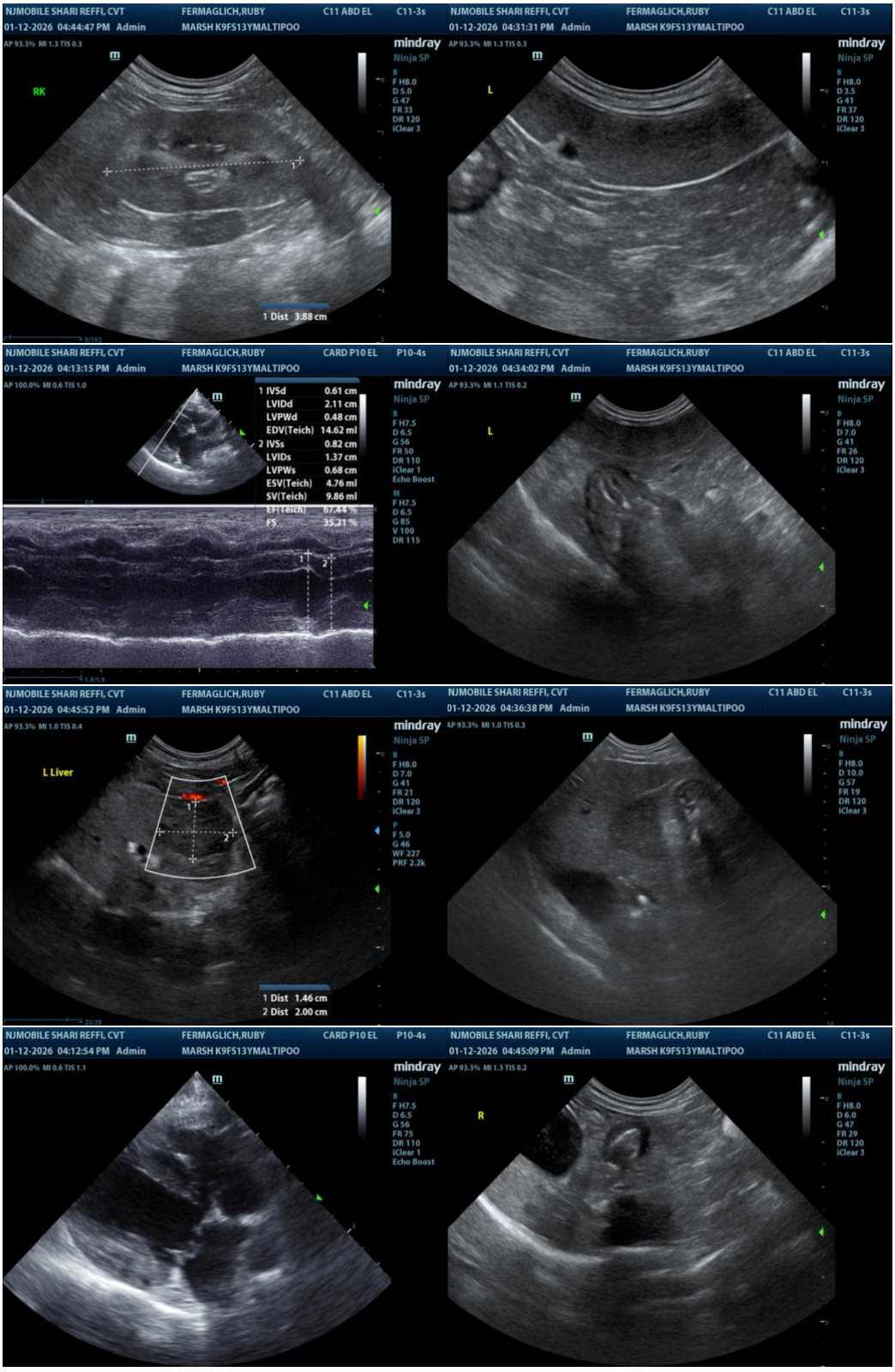

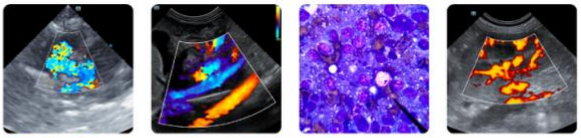

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The information and recommendations provided are based on the images presented by the referring veterinarian/sonographer. No evaluation can be communicated regarding pathology that was not visible in the image/video clips provided.

Thank you for this referral. If the clinical or image interpretation does not parallel your findings or if I can be of any further assistance please contact me.

Bradley Harris, DVM, DACVECC, DACVIM (cardiology)

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